DOCUMENT RESUME

ED 271 075 HE 019 456

AUTHOR Johnson, Naomi T.; Richardson, Richard C., Jr.
TITLE A Causal Model of Academic Factors Affecting Student Persistence.
PUB DATE Apr 86
NOTE 29p.; Paper presented at the Annual Meeting of the American Educational Research Association (70th, San Francisco, CA, April 16-20, 1986). Appended materials contain small print.
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Academic Achievement; Academic Aspiration; *Academic Persistence; *College Transfer Students; Commuting Students; Higher Education; *Models; *Predictor Variables; *Student Attitudes; *Undergraduate Students; Urban Universities

ABSTRACT

A causal model of academic factors affecting undergraduate student persistence at a large, urban, commuter university was tested. The effects of academic variables on persistence from fall to spring semester were also assessed for transfer and native students. The model accounted for 49% of the total variance in persistence, while separate models for transfers and natives accounted for 55% and 51%, respectively. The variables having the greatest direct or indirect effects on persistence were practical value, academic integration, academic satisfaction, academic performance, and intent. The results indicate that academic factors represent an important component in student persistence models. Although persistence rates of transfers and natives were not significantly different, the following differences between the two groups were found: academic performance had a greater effect on persistence for natives, academic difficulty was a factor only for natives and educational aspiration only for transfers, the effects of external factors on academic satisfaction and the effects of academic satisfaction on performance were positive for transfers and negative for natives, the students' gender and class level also contributed to these differences. It is recommended that this causal model of transfer student persistence be used in further research. References, figures and data tables are appended. (Author/SW)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED271075

A Causal Model of Academic Factors Affecting Student Persistence

Naomi T. Johnson
Richard C. Richardson, Jr.

Department of Higher & Adult Education
Arizona State University
Tempe, Arizona 85287

Paper Presented at the Annual Meeting of
The American Educational Research Association
San Francisco, California

April 1986

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Naomi T. Johnson

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

✓ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

HE 019 456

ABSTRACT

The study's purposes were to develop and test a causal model of academic factors affecting undergraduate student persistence at a large, urban, commuter university, and to discover whether differences existed between transfer and native students in the effects of academic variables on persistence from fall to spring semester.

After modifications in the proposed model, the final, general model accounted for 49 percent of the total variance in persistence; separate models for transfers and natives accounted for 55 percent and 51 percent respectively. The variables having the greatest direct or indirect effects on persistence were practical value, academic integration, academic satisfaction, academic performance and intent. The results indicate that academic factors represent a very important component in student persistence models.

There were differences in magnitude, pattern and significance of the relationships among the factors in the causal models for transfer and native students, though there was not a significant difference in persistence rates. Academic performance had a greater effect on persistence for natives. Academic difficulty was a factor only for natives and educational aspiration only for transfers. The effects of external factors on academic satisfaction and academic satisfaction on academic performance were positive for transfers and negative for natives. The students' gender and class level also contributed to these differences. The final causal model for transfers developed in this study can serve as a base for further research on transfer student persistence in universities.

A Causal Model of Academic Factors Affecting Student Persistence

Transfer students represent a large proportion of the student population at a university. In many universities and four-year colleges, the shape of the student body has become an inverted triangle. There are more students at the junior and senior levels than at the freshman level because of the influx of transfer students from community and junior colleges.

However, studies have also shown that community college transfers have a lower retention rate than native students (Avakian, MacKinney, & Allen, 1982; Kissler, Lara, & Cardinal, 1981). Attrition rates have ranged from 14 to 27 percent for native freshman students and 22 to 35 percent for transfer students after the first semester of attendance at a university (Newlon & Gaither, 1980; Tweddale, 1977). Attrition rates after the first year have been reported as 32 percent for native freshmen and 34 percent for transfer students (Newlon & Gaither, 1980).

Given the number of community college transfer students, it is important for universities to understand what factors influence their attrition in order to increase their persistence rate and success in college. Lenning, Beal and Sauer (1980) recognized this as an important issue and recommended research be conducted on how factors related to attrition are different

for those students entering universities as transfers. It is also generally recognized that additional studies are needed to validate and further test various factors in retention models and to refine these models for different subgroups of students.

This study investigated student attrition at a large, urban, commuter university. As students frequently judge the quality of a university and make their decisions to continue their education on their academic experiences (Higgerson, 1985; Smith, Lippett, Noel, & Sprandel, 1981), the focus of the study was narrowed to academic variables. By concentrating on academically related factors, the proposed model aimed at achieving a better understanding of students' responses to the academic domain of a university.

The primary purpose of the study was to develop and test a causal model of academic factors affecting student persistence at the university. The second purpose of the study was to discover whether there were differences between transfer and native students in the relationships among the academic factors and persistence. These results were further investigated to discover if gender or class level influenced the relationships.

The Theoretical Model

Bean's synthetic model was selected as a base for this study because it integrates many of the findings of earlier

retention studies and has more generally defined factors in the model that allow greater flexibility in selection of variables. This selection is governed by only two, though very important, criteria. The relationships among the proposed variables in the synthetic model must be based upon previous research as reported in the literature and the selection of variables must be governed by the criterion of whether or not their inclusion will contribute significantly to understanding dropout behavior (Bean, 1979).

Consistent with the synthetic model, the proposed model was causal. Causal modeling is a method for specifying the effects of organizational environments on processes affecting individuals (Smith-Lovin & Wilson, 1980). A causal model is composed primarily of two types of variables: endogenous and exogenous. An endogenous variable is a dependent variable (i.e., effect) whose occurrence is explained by the structural model. An exogenous variable is a predetermined variable that acts as a cause but whose occurrence will not be explained by the model (Pedhazur, 1982).

For this study, the exogenous variables were academic self-concept, educational aspiration, practical value, academic integration, academic difficulty, and external factors. The intervening variables were academic satisfaction and academic performance, and the endogenous variables were intent and persistence. Intervening variables can be treated as endogenous in one set of variables but also as endogenous in relation to other

variables. Figure 1 displays the conceptual model. The following briefly describes the variables in the study.

Persistence was defined as returning to the university the following spring semester. The percentage of total variance explained in persistence, R^2, in attrition studies has ranged from 12 to 56 (Bean, 1980a; Pascarella & Chapman, 1983).

Intent was defined as the expectation of returning to the university the following spring semester. Intention is considered an important variable to include in retention models because it is a good predictor of actual persistence behavior and it is of practical value as it can be assessed before a student leaves an institution, thus providing an opportunity to intervene in the dropout process (Bean, 1981). Intention has been shown to have a major influence on dropout decisions; intent to leave has explained over fifty percent of the total variance for dropout (Bean, 1980a). Intent was placed immediately prior to persistence in the proposed model and in the synthetic model according to the research of Fishbein and Ajzen (1975) which reported that dropout decisions are the result of attitudes, norms, and previous behavior, with intention as the intervening variable. Intent is also hypothesized to subsume most of the effects of the exogenous variables in explaining the variance in persistence.

Academic satisfaction was defined as satisfaction with the quality of education at the university. Student satisfaction has played an important role in conceptual models of student

attrition (Bean, 1981b; Spady, 1971; Tinto, 1975). College student satisfaction is composed of satisfaction with the academic milieu and the social milieu. Though both are important, it has been found that the academic domain has a greater influence on student persistence (Aitken, 1982; Higgerson, 1985; Munro, 1981). Although most models and studies assume that satisfaction is directly affected by grade performance (Liu & Jung, 1980; Morstain, 1977), a few studies have had different findings. Students with high levels of total college satisfaction obtained significantly higher grades than students whose satisfaction with college in general was low (Bean & Bradley, 1984).

Academic performance was defined as the student's actual grade point average for fall semester. Grade performance has also been shown to be an important factor in predicting persistence in college in innumerable studies (Aitken, 1982; Astin, 1975; Bean, 1979; 1982b; Hilton, 1982; Spady, 1971; Tinto, 1975).

Practical value was defined as the perception that one's education would be useful for getting a job and for self-development. Practical value has been directly and significantly related to satisfaction (Bean, 1981a; Bean & Bradley, 1984; Liu & Jung, 1980), but not significantly related to GPA (Bean & Bradley, 1984). The more intensely people believe that the education they are currently receiving will lead to employment after college, the less likely they are to leave (Bean, 1979).

Educational aspiration was defined as the highest level

of education the student intended to obtain. A person's educational goals are significantly related to college student satisfaction (Bean, 1981; Jenks, Kahane, Bobinski, & Piermarini, 1979) and influence a student's decision to remain at the college (Bean, 1979).

Academic self-concept was defined as confidence in one's ability to be a successful student in the university. General self-concept is composed of two major dimensions, one academic and the other nonacademic. Results of studies indicate that the academic self-concept has a major influence on student persistence (Shavelson, Hubner, & Stanton, 1976).

Academic difficulty was defined as perceiving one's academic program as difficult and too competitive. Students who find their courses more difficult and competitive than they like, are less likely to get good grades (Bean, 1980a). In this sense, difficulty is not viewed as challenging, but as unpleasant. Students who view their academic experiences as unpleasant, are, in general, more dissatisfied with their college experience.

Academic integration was defined as being interested, involved and motivated and perceiving that one "thinks like faculty". The powerful influence of academic integration has been well documented in the literature. The theoretical models developed by Tinto (1975) and Spady (1971) show that integration is a very important factor in determining attrition among college students. A major component of the integration variable is the

student-faculty relationship. The number of contacts students have with faculty and the type, i.e., advising, intellectual discussions, or career planning, have a great effect on students' persistence, satisfaction and achievement (Pascarella & Terenzini, 1977).

The external factors variable was defined as the degree to which family, job and financial pressures were perceived as affecting one's role as a student. External factors refer to the major factors outside of the university experience and the university control which have a negative effect on retention. External factors can include family/personal problems, number of personal problem days, and/or financial problems (Aitken, 1982). This set of factors has not been widely studied; however, concern with family/personal problems has been found to be statistically related to dropout (Aitken, 1982).

A student status variable consisting of two groups, new community college transfer students and native students, was used to further test the proposed causal model and to provide information about differences between these groups within the model. Variables of gender and class level, i.e., sophomore and junior, were used to check whether differences in the causal model between the student status groups were attributable to differences in gender or class level.

Methodology

The study utilized a survey research approach that was descriptive and cross-sectional. It followed Bean's recommendation (1979, 1980b, 1981a, 1981b, 1984) that a homogeneous sample be selected from the total population in studies using a causal model. One probable reason for the low R^2 produced in most multivariate studies is the use of heterogeneous populations. By reducing sample heterogeneity, potentially confounding variables are eliminated and the factors affecting attrition become more easily identified (Bean & Bradley, 1984; Kerlinger & Pedhazur, 1973).

The survey population was defined as all undergraduate students registered fall semester 1984 who were caucasian, U.S. citizens, enrolled full-time, commuters, i.e., not living in university housing, and who had completed 25-86 academic units. This survey population was stratified, first by student status and then by gender. Student status consisted of two subsets -- native students who had begun their postsecondary academic career at the university, and transfer students who had completed their first 25-86 academic units at a community college before attending the university. From this population, a random sample of 955 students was drawn; the response rate to the questionnaire was 60.2 percent.

The only characteristic on which there was a significant

difference between survey respondents and the total sample was fall GPA. Respondents had a significantly higher fall GPA mean ($p<.01$). However, there was not a significant difference in mean GPA between the survey respondents and the population from which the sample was drawn. Among the respondents, transfer students had a significantly higher fall mean GPA and more were older than 25 years of age than were native students ($p<.01$).

Most of the data were gathered from a questionnaire administered to the student sample in fall semester 1984. Data on spring semester persistence and fall semester GPA were taken from registration records.

The questionnaire was comprised of scales from other instruments shown to be valid and reliable. The measures used were the Academic Self-Concept Scale (Reynolds, Ramirez, Magrina, & Allen, 1980), the quality of education scale from the College Student Satisfaction Questionnaire (Starr, Betz, & Menne, 1970), and the academic integration, utility, and academic difficulty scales from the Student Attitude Questionnaire (Bean, 1983). In addition, questions regarding educational aspiration, intent and external factors were included in the questionnaire.

The Linear Structural Relations (LISREL) technique (Joreskog & Sorbom, 1984) was selected for this study because its application can determine whether or not a pattern of correlations for a set of observations is consistent with a specific theoretical model. LISREL combines multiple regression, path analysis, and

common factor analysis techniques (Asher, 1983).

The LISREL VI program utilizes a maximum likelihood approach to model estimation of the paths, or parameters, in place of the least-squares approach used by path analysis. This allows the assessment of differences in the adequacy of causal models for two or more populations and in particular paths for different populations. The maximum likelihood method also determines whether specific causal parameters are different from zero (Smith-Lovin & Wilson, 1980). Parameter values are the standardized partial regression coefficients (beta weights).

The conceptual model initially proposed (Table 1) was modified through the use of theory trimming, a means of increasing the significance of the chi-square by adding or deleting paths; The lower the chi-square statistic in relation to the degrees of freedom, the more valid the model. However, the modifications were primarily done on the basis of theory and previous research, not simply on the basis of the statistical analysis (Kerlinger & Pedhazur, 1973). LISREL VI was also used to check for significant differences between the transfer and native groups on each parameter of the endogenous variables.

Findings and Discussion

The proposed model of academic factors affecting student persistence was found not to fit the collected data very well.

However, after modifications, the final causal models for the total respondents (χ 12.98, df 16)and for the transfer student group (χ 12.61, df 16)fit the data quite well, while the final model for native students fit the data very well (χ 9.81, df 17). Figures 2 and 3 depict the final models and parameters for the total respondents and native and transfer groups, while Tables 1 through 3 display the total effects coefficients.

The focus of the study was on academic factors and their effect on student persistence. These academic factors plus an external factors variable accounted for 49 percent of the total variance in persistence in the total respondents model. The factors accounted for a larger percentage of the variance in the transfer student model (55) and native student model (51). These figures compare very favorably to percentages of variance obtained in retention studies by Bean (1980a, 1981a, 1981b), Pascarella (1980), and Pascarella and Terenzini (1983) which included social factors in addition to academic factors.

As predicted in the research by Bean (1980a, 1981a), the intent variable proved to be the major factor in persistence (total respondents .49, natives .49 and transfers .44, $p<.001$). The variable with the second largest direct effect on persistence was academic performance (natives .24, total respondents .16 and transfers .10). Student's grade point average had a direct and positive influence on whether a student returned to the university the following semester.

In studies which utilize Bean's concept of intent, attention is given to the factors that influence this variable. As was predicted by the literature (Bean, 1982a), academic satisfaction and academic performance directly affected the students' intent to persist in college. What was not anticipated was the large, positive impact of practical value on intent (natives .20, total respondents .14 and transfers .10). The direct effect of the perception of the value of a college education on the decision to continue in college may be a reflection of the vocational, pragmatic thinking of today's students (Winn, 1985). The effect of practical value on intent was greater for native females than for transfers or male students. The literature has usually reported the opposite (Bean & Bradley, 1984; Sandeen & Goodale, 1976).

Practical value also accounted for the largest amount of variance in academic satisfaction for the total respondents and all subsets (transfers .40, total respondents .37 and natives .33); the parameters were all significant at the .001 level. The more that students perceived their major and the courses taken in college would help them get a good job after graduation the more satisfied they were with their academic program.

Academic integration had a major, significant impact on academic satisfaction (transfers .35, natives .34 and total respondents .31) and a positive impact on academic performance (total respondents and transfers .15 and natives .09). The importance

of academic integration to college students is well documented in the literature (Bean & Bradley, 1984; Pascarella & Terenzini, 1983) and serves as a focal point in Tinto's student retention model (1975).

In Bean and Bradley's research, academic satisfaction was found to affect academic performance directly and positively; other research had shown academic performance affecting academic satisfaction (1984). This study provided limited support for the Bean and Bradley results when the data were classified by student status. For transfer students, academic satisfaction had a positive effect on academic performance (.14); however, for native students the relationship was negative (.09).

The external factors variable, representing the influence of finances, employment and family support on college attendance, was proposed to have a direct, negative effect on persistence and intent (Aitken, 1982; Bean, 1982a). Only for one subset, native juniors, did this occur (-.01). In the other models, the relationships between external factors and the variables of persistence and intent were positive (ranging from .05 to .10). The students either did not perceive external factors having a negative effect on them in their role as students, or the questionnaire did not reliably measure this variable. The results of the study as well as research by Bean (1982a) suggest that the nature and magnitude of the effects of external factors on persistence require further study.

The academic self-concept variable had a small, but very significant effect on academic performance for all subsets (.03, $p<.001$) supporting Bean's findings that students who are confident in their ability to succeed in college will achieve higher GPAs (1981a).

The effects of academic difficulty and educational aspiration were small and very mixed within the different subsets suggesting their impact on student academic satisfaction and performance was an individual phenomenon and could not be generalized across the specific groups of students.

The model anticipated that the effects of educational aspiration, academic self-concept and academic integration for transfer students would be smaller and the effects of practical value, external factors, academic performance and academic difficulty would be larger than for native students. For the most part, these expected differences were not supported. There were no differences between transfer and native students in the effects of academic self-concept and intent. Academic performance had a greater effect on the persistence of native students. The academic difficulty and competitiveness of the academic program was a factor only for the native students, while educational aspiration was important only for transfer students. These results differ from literature which indicates that community college transfer students are less self-confident and less able to cope with the academic demands of the university (Goodale & Sandeen,

1971; Holahan & Kelley, 1978; Richman, 1979).

The differences between the student status groups on the relationships within the causal model were further analyzed by gender and class level. The analysis indicated that the path from academic difficulty to academic satisfaction in the native model could be attributed to gender (female) and the path from educational aspiration to academic satisfaction in the transfer model could be attributed to class level (junior). Differences between transfer and native student groups for the effect of external factors on academic satisfaction were due to the mediating effects of gender; differences which existed between transfers and natives for the effects of external factors on persistence and academic performance on persistence were due to their student status.

When differences between student status groups on each parameter of the endogenous variables were checked for significance, the betas were found not to be statistically significant ($p>.05$) indicating no significant differences between transfer and native students for the effects of intent on persistence, academic satisfaction on intent, academic performance on intent, academic performance on persistence, and academic satisfaction on academic performance. There were also no significant differences when student status by gender subsets were tested. However, the effect of academic satisfaction on academic performance for the transfer junior subset was significantly different from that for the

native junior subset ($p<.01$). Though the differences between the transfer and native student groups were primarily attributable to student status, gender and class level also contributed to the differences.

Conclusion

The academic factors considered in this causal model provided insights into student persistence and confirmed the large influence of the academic domain on persistence. The academic variables, in conjunction with an intent variable, accounted for as much variance in persistence as other studies which have included both academic and social factors.

Student perceptions of the value of their education to future employment, their degree of integration into the academic domain, their academic performance and satisfaction with the academic program, and their intent to continue their attendance in college all have a substantial positive effect on actual persistence. Though there was no significant difference in the persistence rates of new transfer students and native students, there were differences in the magnitude and significance of the relationships among the academic factors affecting persistence for the two groups. The students' gender and class level also contributed to differences between native students and new transfer students.

References

Aitken, N. D. (1982). College student performance, satisfaction and retention. Journal of Higher Education, 53, 1, 32-50.

Asher, H. B. (1983). Causal modeling (2nd ed.). Beverly Hills: Sage Publications.

Astin, A. W. (1975). Preventing students from dropping out. San Francisco: Jossey-Bass, Inc.

Avakian, A. N., MacKinney, A. C., & Allen, G. H. (1982). Race and sex differences in student retention at an urban university. College and University, 52, 160-165.

Bean, J. P. (1979, April). Path analysis: The development of a suitable methodology for the study of student attrition. Paper presented at the meeting of the American Educational Research Association, San Francisco.

Bean, J. P. (1980a). Dropouts and turnover: The synthesis and test of a causal model of student attrition. Research in Higher Education, 12, 2, 155-187.

Bean, J. P. (1980b, April). The synthesis of a theoretical model of student attrition. Paper presented at the meeting of the American Educational Research Association, Los Angeles.

Bean, J. P. (1981a, April). Student attrition, intentions, and confidence: Interaction effects in a path model part I. The 23 variable model. Paper presented at the meeting of the American Educational Research Association, Los Angeles.

Bean, J. P. (1981b, May). The application of a model of turnover in work organizations to the student attrition process. Paper presented at the meeting of the Association for Institutional Research, Minneapolis.

Bean, J. P. (1982a) Conceptual models of student attrition: How theory can help the institutional researcher. In E. Pascarella (Ed.), Studying student attrition. New directions for institutional research, No. 36. San Francisco: Jossey-Bass, Inc.

Bean, J. P. (1982b, April). The interaction effects of GPA on other determinants of student attrition in a homogeneous population. Paper presented at the meeting of the American Educational Research Association, New York.

Bean, J. P. (1983). Student Attitude Questionnaire (SAQ). Indiana Univeristy: author.

Bean, J. P., & Bradley, R. K. (1984, April). Untangling the satisfaction-performance relationship for college students. Paper presented at the meeting of the American Educational Research Association, New Orleans.

Fishbein, M., & Ajzen, I. (1975). Belief, attitude, intention and behavior. Reading, MA: Addison Wesley Publishing Company.

Getzlaf, S. B., Sedlacek, G. M., Kearney, K. A., & Blackwell, J. M. (1984). Two types of voluntary undergraduate attrition: Application of Tinto's model. Research in Higher Education, 20, 3, 257-268.

Goodale, T., & Sandeen, A. (1971). The transfer student: A research report. NASPA Journal, 9, 4, 248-263.

Higgerson, M. L. (1985). Understanding why students voluntarily withdraw from college. NASPA Journal, 22, 3, 15-21.

Hilton, T. L. (1982). Persistence in higher education (College Board Report No. 82-5). Princeton, NJ: Educational Testing Service. (ERIC Document Reproduction No. ED 227 737)

Holahan, C. K., & Kelley, H. P. (1978). The relationship of the characteristics of entering transfer students and their previous colleges to their attitudes and performance. Educational Research Quarterly, 3, 1, 58-66.

Jenks, J., Kahane, J., Bobinski, V., & Piermarini, T. (1979). The relationship between perceived college student satisfaction and goal-directedness. Measurement and Evaluation in Guidance, 11, 4, 225-229.

Joreskog, K.G., & Sorbom, D. (1984). LISREL VI: Analysis of linear structural relationships by the method of maximum likelihood. Mooresville, IN: Scientific Software, Inc..

Kerlinger, F. N., & Pedhazur, E. (1973). Multiple regression in behavioral research. New York: Holt, Rinehart, and Winston.

Kissler, G. R., Lara, J. F., & Cardinal, J. L. (1981, April). Factors contributing to the academic difficulties encountered by students who transfer from community colleges to four-year institutions. Paper presented at the meeting of the American Educational Research Association, Los Angeles.

Lenning, O. T., Beal, P. E., & Saur, K. (1980). Retention and attrition: Evidence for action and research. Boulder: National Center for Higher Education Management Systems.

Liu, R., & Jung, L. (1980). The commuter student and student satisfaction. Research in Higher Education, 12, 3, 215-226.

Morstain, B. R. (1977). An analysis of students' satisfaction with their academic program. Journal of Higher Education. 48, 1, 1-16.

Munro, B. H. (1981). Dropouts from higher education: Path analysis of a national sample. American Educational Research Journal, 18, 2, 133-141.

Newlon, L. L., & Gaither, G. H. (1980). Factors contributing to attrition: An analysis of program impact on persistence patterns. College and University, 55, 237-251.

Pascarella, E. T. (1980). Student-faculty informal contact and college outcomes. Review of Educational Research, 50, 4. 545-595.

Pascarella, E. T., & Chapman, D. W. (1983). A multiinstitutional, path analytic validation of Tinto's model of college withdrawal. American Educational Research Journal, 20, 1, 87-102.

Pascarella, E. T., & Terenzini, P. T. (1977). Patterns of student-faculty informal interaction beyond the classroom and voluntary freshman attrition. Journal of Higher Education, 48, 5, 540-552.

Pascarella, E. T., & Terenzini, P. T. (1983). Predicting voluntary freshmen year persistence/withdrawal behavior in a residential university: A path analytic validation of Tinto's model. Journal of Educational Psychology, 75, 2, 215-226.

Pedhazur, E. J. (1982). Multiple regression in behavioral research (2nd ed.). New York: Holt, Rinehart and Winston.

Reynolds, W. M., Ramirez, M. P., Magrina, A., & Allen, J. E. (1980). Initial development and validation of the Academic Self-Concept Scale. Educational and Psychological Measurement, 40, 4, 1013-1016.

Richman, J. M. (1979). Homogenous housing: A transfer student adjustment program. NASPA Journal, 17, 2, 43-48.

Sandeen, A., & Goodale, T. (1976, September). The transfer student:

An action agenda for higher education. University of Florida: Institute of Higher Education. (ERIC Document Reproduction Service No. ED 154 750)

Shavelson, R. J., Hubner, J. J., & Stanton, G. C. (1976). Self-concept: Validation of construct interpretations. Review of Educational Research, 46, 3, 407-441.

Smith, L. N., Lippitt, R., Noel, L., & Sprander, D. (1981). Mobilizing the campus for retention: An innovative quality of life model. Iowa City: The American College Testing Program.

Smith-Lovin, L., & Wilson, K. L. (1980). On the practical value of causal modeling II. Educational attainment and the measurement of conceptual variables. The Journal of Applied Behavioral Science, 16, 4, 547-565.

Spady, W. G. (1971). Dropouts from higher education: Toward an empirical model. Interchange, 2, 3, 38-62.

Starr, A. M., Betz, E. L., & Menne, J. W. (1971). College Student Satisfaction Questionnaire (CSSQ). Ames, IA: Central Iowa Association.

Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. Review of Educational Research, 45, 1, 89-125.

Tweddale, R. B. (1977, September). Attendance behavior of new students entering GVSC fall, 1975, and fall, 1976. Allendale, MI: Grand Valley State College. (ERIC Document Reproduction Service No. ED 156 014)

Winn, M. (1985). The plug-in generation. Change, 17, 3, 14-20.

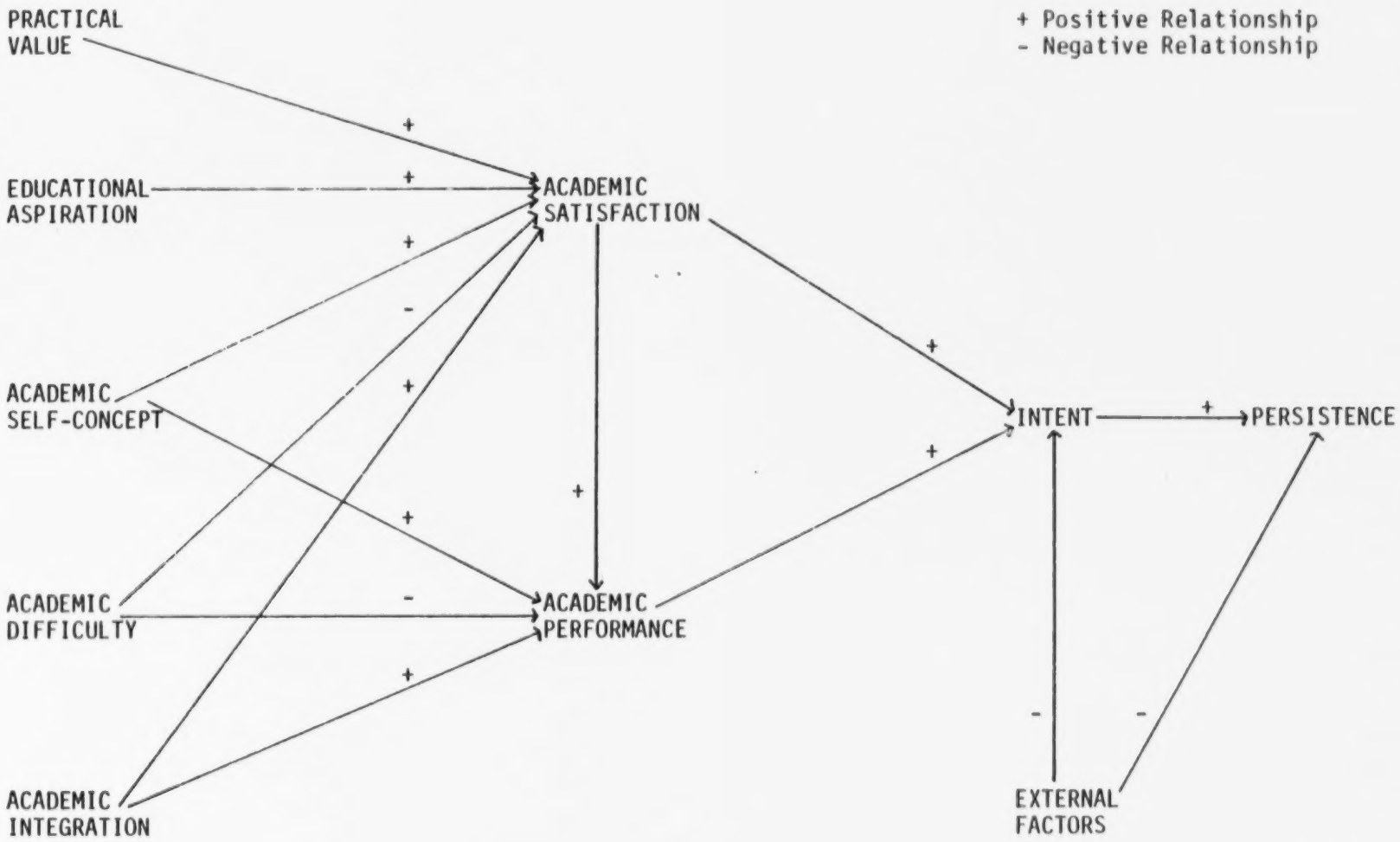

Figure 1

A causal model of academic factors affecting persistence

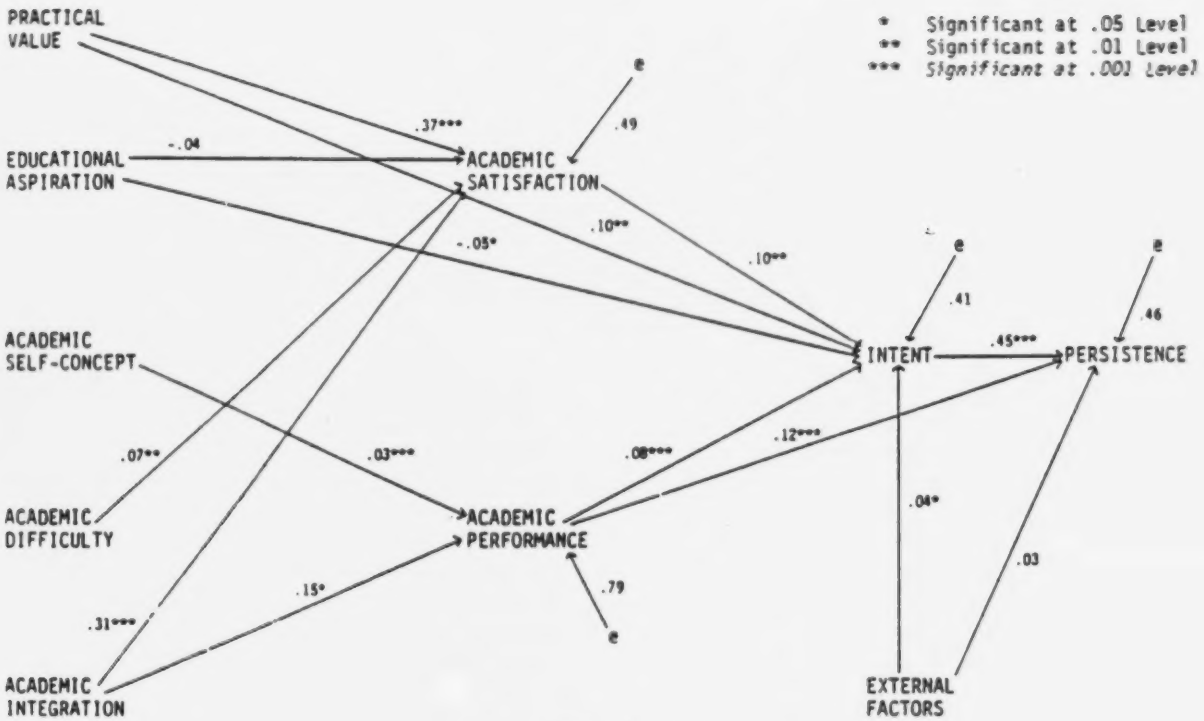

FIGURE 2

Final model of academic factors affecting persistence
Total Respondents

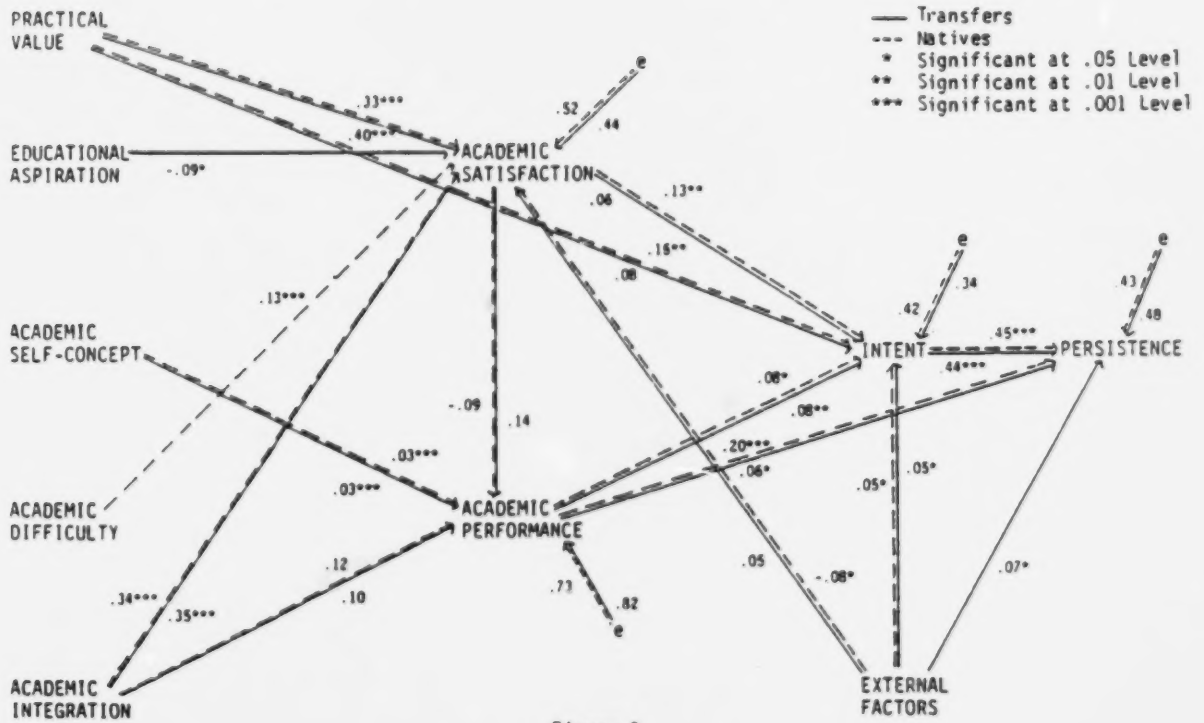

Figure 3

Final model of academic factors affecting persistence
Student status groups

Table 1

Total Effects Coefficients for Total Respondents

Variable	Persistence	Intent	Academic performance	Academic satisfaction
Practical Value	(.06)	.14	0	.37
Educational Aspiration	(-.02)	-.05	0	-.04
Academic Self-Concept	0	0	.03	0
Academic Difficulty	0	(.01)	0	.07
Academic Integration	(.04)	(.04)	.15	.31
External Factors	.05	.04	0	0
Academic Satisfaction	(.05)	.10	0	
Academic Performance	.16	.08		
Intent	.45			

Note. Numbers in parentheses are the result of indirect effects only.

Table 2

Total Effects Coefficients for Student Status Groups

	Persistence		Intent		Academic performance		Academic satisfaction	
Variable	Transfer	Native	Transfer	Native	Transfer	Native	Transfer	Native
Practical Value	(.05)	(.08)	.10	.20	(.06)	(-.03)	.40	.33
Educational Aspiration	0	0	0	0	(-.01)	0	-.09	0
Academic Self-Concept	0	0	0	0	.03	.03	0	0
Academic Difficulty	0	0	0	(.02)	0	(-.01)	0	.13
Academic Integration	(.02)	(.04)	(.03)	(.05)	.15	.09	.35	.34
External Factors	.09	(.02)	.05	.04	(.01)	(.01)	.05	-.08
Academic Satisfaction	(.04)	(.04)	.07	.13	.14	-.09		
Academic Performance	.10	.24	.08	.08				
Intent	.44	.45						

Note. Numbers in parentheses are the result of indirect effects only.

Table 3

Total Effects Coefficients for Student Status by Gender Subsets

Variable	Persistence				Intent				Academic Performance				Academic Satisfaction			
	Native female	Transfer female	Transfer male	Native male	Native female	Transfer female	Transfer male	Native male	Native female	Transfer female	Transfer male	Native male	Native female	Transfer female	Transfer male	Native male
Practical Value	(.16)	(.02)	(.07)	(.02)	.33	(.04)	.16	(.06)	0	(.07)	(.05)	0	.30	.50	.32	.37
Educational Aspiration	0	(-.004)	(-.002)	(-.04)	0	(-.01)	(-.001)	-.10	0	(-.01)	(-.02)	0	0	-.09	-.12	0
Academic Self-Concept	(.01)	(.003)	(.002)	(.01)	(.003)	(.002)	(.002)	(.003)	.03	.03	.02	.03	0	0	.01	0
Academic Difficulty	(.01)	0	0	(-.02)	(.03)	0	0	(-.01)	0	0	0	-.11	.20	0	0	0
Academic Integration	(.03)	(.04)	(.01)	(.02)	(.05)	(.05)	(.003)	(.04)	0	.27	(.05)	0	.37	.36	.29	.25
External Factors	(.02)	.08	.10	0	.05	.03	.07	0	0	0	(.01)	0	-.12	0	.08	0
Academic Satisfaction	(.07)	(.05)	(.02)	(.06)	.15	.07	(.01)	.17	0	.14	.17	0				
Academic Performance	.29	.12	.10	.18	.10	.09	.07	.08								
Intent	.49	.49	.42	.37												

Note. Numbers in parentheses are the result of indirect effects only.

Table 4

Total Effects Coefficients for Student Status by Class Level Subsets

Variable	Persistence				Intent				Academic Performance				Academic Satisfaction			
	Native sophomore	Transfer sophomore	Transfer junior	Native junior	Native sophomore	Transfer sophomore	Transfer junior	Native junior	Native sophomore	Transfer sophomore	Transfer junior	Native junior	Native sophomore	Transfer sophomore	Transfer junior	Native junior
Practical Value	(.08)	(-.02)	(.08)	(.08)	.24	(-.01)	.16	(.06)	0	(-.08)	(.13)	(-.04)	.38	.40	.41	.33
Educational Aspiration	(-.04)	0	0	0	-.12	0	(-.01)	0	0	0	(-.03)	0	0	0	-.10	0
Academic Self-Concept	(.01)	(.01)	0	0	0	0	0	0	.03	.04	.02	.03	-.01	0	0	0
Academic Difficulty	(-.02)	0	0	(.01)	0	0	0	(.02)	-.08	0	0	(-.02)	.16	0	0	.13
Academic Integration	(.01)	(-.01)	(.02)	(.06)	(.03)	(-.01)	(.01)	(.07)	0	(-.06)	(.12)	.12	.31	.28	.38	.37
External Factors	0	.07	.10	-.01	0	0	.06	.03	0	0	0	0	0	0	0	0
Academic Satisfaction	(.03)	(-.05)	(.04)	.09	.10	(-.02)	.08	.19	0	-.21	.30	-.12				
Academic Performance	.29	.25	(.01)	.16	.08	.11	.06	.07								
Intent	.31	.32	.50	.60												

Note. Numbers in parentheses are the result of indirect effects only.

BEST COPY AVAILABLE